IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of	:	**Confirmation No. 2420**
Ryoumei OMOTE et al.	:	Docket No. 2000-0258A
Serial No. 09/486,890	:	Group Art Unit 1775
Filed May 26, 2000	:	Examiner Andrew Piziali

TRANSPARENT CONDUCTIVE FILM FOR USE IN TRANSPARENT TOUCH PANEL, TRANSPARENT TOUCH PANEL USING THE TRANSPARENT CONDUCTIVE FILM, AND METHOD FOR FABRICATING TRANSPARENT CONDUCTIVE FILM :

THE COMMISSIONER IS AUTHORIZED TO CHARGE ANY DEFICIENCY IN THE FEE FOR THIS PAPER TO DEPOSIT ACCOUNT NO. 23-0975.

RESPONSE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Responsive to the Office Action of April 15, 2003, the time for responding thereto being extended for three months in accordance with a Petition for Extension of Time submitted herewith, Applicants submit the following remarks in support of the allowance of the present claims. Further and favorable reconsideration is respectfully requested in view of these remarks.

Initially, in response to the requirement for corrected drawings, please see the attached cover sheet and corrected drawings.

In response to the objection to claims 33, 36, 38, 40, 42, 44 and 45 as being of improper dependent form for failing to further limit the subject matter of a previous claim, Applicants note that these claims are directed to a transparent touch panel, whereas the claims from which they depend are directed to a transparent conductive film. Accordingly, the claims to the touch panel do further

limit the claims to the conductive film. Applicants thus respectfully submit that the objection to the claims should be withdrawn.

The patentability of the present invention over the disclosures of the references relied upon by the Examiner in rejecting the claims will be apparent upon consideration of the following remarks.

The object of the present invention is to provide a transparent conductive film for use in a transparent touch panel capable of performing stable, light touch inputs, a transparent touch panel using the transparent conductive film, and a method for fabricating a transparent conductive film, by which the problems described in the "Background Art" of the present specification can be solved.

The feature of the present invention is that a lower electrode and an upper electrode are stacked so as to be spaced from each other by spacers, the transparent conductive film being provided on an electrode substrate of at least one of the electrodes and thereby forming the electrode, wherein the transparent conductive film has, in its surface shape, an arithmetic mean roughness (Ra) within a range of 0.4 nm $\leq$ Ra $\leq$ 4.0 nm and a root-mean-square roughness (Rms) within a range of 0.6 nm $\leq$ Rms $\leq$ 3.0 nm. Therefore, a film in which crystal grain aggregates are arranged compactly and yet which has good smoothness can be obtained, so that the contact area for input operation can promptly be ensured, thus making the transparent conductive film suitable for light touch inputs. See page 51, lines 6-21 of the specification.

The rejection of claims 16, 19, 23, 26, 28, 30, 32-33, 36, 38, 40, 42, 44-45, 52 and 54 under 35 U.S.C. §103(a) as being unpatentable over Yamazaki et al. (hereinafter referred to as Yamazaki) in view of Applicants' Disclosure, is respectfully traversed.

Yamazaki merely discloses that the transparent conductive laminate is an **amorphous** transparent conductive layer as clearly stated in claim 1, which therefore has no crystals, but fails to teach or suggest that the transparent conductive film includes **crystals**.

As noted at page 19, line 23 - page 20, line 7 of the present specification:

> The transparent conductive film 1 is so formed that the arithmetic mean roughness (Ra) of the surface shape is within a range of 0.4 nm $\leq$ Ra $\leq$ 4. 0 nm and the root-mean-square roughness (Rms) of the surface shape is within a range of 0.6 nm $\leq$ Rms $\leq$ 3.0 nm. The reason of this is that forming the transparent conductive film 1 like this makes it possible to obtain a film in which **crystal grain aggregates** are arranged compact as shown in Fig. 1 and yet which has a good smoothness so that a contact area for input operation can promptly be ensured as shown in Figs. 11 and 12.

That is, Yamazaki fails to teach or suggest an arithmetic mean roughness (Ra) and a root-mean-square roughness (Rms), as well as specified ranges thereof, and it is impossible to perform stable, light touch inputs without setting of the arithmetic mean roughness (Ra) and the root-mean-square roughness (Rms) to the specified ranges. Yamazaki merely discloses ITO transparent conductive electrode film formation and fails to teach or suggest stable, light touch inputs such that an input state can be held for a slight-load input, or any construction suitable for such stable, light touch inputs.

In addition, the Examiner pointed out that the ITO electrodes of Yamazaki possess the claimed surface roughness properties by considering that the ITO films taught by Yamazaki are formed by substantially identical methods compared to the method utilized by the Applicants, referring to Examples 1-4. But, since the ITO of Yamazaki is amorphous, it is not apparent that such amorphous ITO can be formed by a substantially identical method. Furthermore, the materials and conditions and the like of Examples 1-4 of the present application are not clearly disclosed or suggested in Yamazaki (or the other references).

Contrarily, in the present invention, the arithmetic mean roughness (Ra) and the root-mean-square roughness (Rms) are respectively set within specified ranges, and thus stable, light touch inputs can be performed, which is greatly different from Yamazaki.

In relying on Applicants' Disclosure, Applicants assume the Examiner is referring to the discussion in the paragraph bridging pages 3 and 4 of the Office Action. But even if this disclosure is combined with Yamazaki, the result of such combination would still not lead to the presently claimed invention since Yamazaki does not disclose or suggest the transparent conductive film of the present invention.

The rejection of claim 21 under 35 U.S.C. §103(a) as being unpatentable over Yamazaki in view of Applicants' Disclosure and further in view of Yukinobu et al. (hereinafter referred to as Yukinobu), is respectfully traversed.

The comments set forth above concerning Yamazaki and Applicants' Disclosure are considered to be equally applicable to this rejection.

Although Yukinobu discloses that "a transparent conductive ink which contains ultra-fine particles having particle size smaller than the wavelength of visible light" (column 1, lines 25-28), it is very difficult to obtain specified ranges of the arithmetic mean roughness (Ra) and the

root-mean-square roughness (Rms) based on the ultra-fine particle sizes. And although Yukinobu discloses the use of an ITO transparent conductive film, it fails to teach or suggest that the arithmetic mean roughness (Ra) and the root-mean-square roughness (Rms) are respectively set within specified ranges, thus making it possible to perform stable, light touch inputs.

The rejection of claims 16, 19, 23, 26, 28, 30, 32-33, 36, 38, 40, 42, 44-45, 52 and 54 under 35 U.S.C. §103(a) as being unpatentable over Mikoshiba et al. (hereinafter referred as to Mikoshiba) in view of Applicants' Disclosure is respectfully traversed.

The comments set forth above concerning Applicants' Disclosure are equally applicable to this rejection.

Mikoshiba fails to teach or suggest setting the arithmetic mean roughness (Ra) and the root-mean-square roughness (Rms) respectively within specified ranges, to thus enable stable, light touch inputs.

The rejection of claim 21 under 35 U.S.C. §103(a) as being unpatentable over Mikoshiba in view of Applicants' Disclosure and further in view of Yukinobu, is respectfully traversed.

The comments set forth above concerning Mikoshiba, Applicants' Disclosure and Yukinobu are equally applicable to this rejection. As indicated above, neither Mikoshiba nor Yukinobu (nor Applicants' Disclosure) discloses or suggests the transparent conductive film of the present invention.

Therefore, in view of the foregoing remarks, it is submitted that each of the grounds of objection and rejection set forth by the Examiner has been overcome, and that the application is in condition for allowance. Such allowance is solicited.

Respectfully submitted,

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